MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

INTEROFFICE COMMUNICATION

TO: Byron Lane, Chief, Dam Safety Program

FROM: Paul Wessel, P.E., Dam Safety Program

DATE: December 1, 2006

SUBJECT: Preliminary Plans for Plainwell Dam #1 (ID 491) Removal

Byron, here are my initial comments on the proposed Plainwell Dam removal.

Water Control Structure Plan

1. How are they planning to install the concrete seal at the base of the structure? Based on the discussion, this installation is to be done in the wet. Are they planning to use underwater concrete or something else? It is important that this concrete be level to provide a sound base for the stoplogs and prevent excessive leakage.

2. Is 5 feet going to be deep enough for the sheet pile cutoff wall? There will be the potential of 10 feet of head on the structure. Calculations justifying the cutoff wall design should be provided.

3. The proposed operation plan and structure design will require daily surveillance for manipulation of stoplogs. It will also require a significant amount of time to remove and store stoplogs from 15 separate bays.

4. Plans call for a W 8' x 10', but the stoplogs are only 6' x 6'. Is this going to cause problems with keeping the stoplogs in place?

5. As shown on the plan, scour protection will need to be designed and included in the final plans.

Hydraulic Analysis

1. The consultant used outdated discharge values. The values are close for the 100-year flood event (9,700 - 10,000 cfs), but there is a considerable difference for the 10-year flood event (5,750 - 6,500 cfs).

2. Hydraulic analysis concentrated on mean flow and bankfull event. The consultant went into little detail on the 100-year flood event and didn't discuss design flood (0.5 percent chance).

3. The proposed partial removal calls for flow to be conveyed through the former powerhouse area. This will significantly alter flow patterns downstream, which in turn will result in stream bed scour and deposition downstream of the dam (likely scour in the west channel and deposition in the east). This has not been well quantified. Overall, details are lacking on conditions downstream of dam.

4. Water surface profile should be provided for 100-year flood event. Figures E-17 and E-18 show no velocity in the old spillway during the 100-year flood event. Does this mean there will be no flow over the old spillway even in the 100-year flood event? I find that somewhat difficult to believe.

5. The hydraulic analysis used a rating curve at USGS Cross-Section Transect A7, which is located downstream of the dam. This rating curve should be verified, as it would be useful in determining if the proposed work could be considered a dam removal, per Part 315.

Overall Comments

The proposed new channel design is a prismatic channel. This is not necessarily a natural channel, as DNR had hoped.

Leaving the old overflow spillway in place will maintain an attractive nuisance. There will be little to no flow over it, so it will be more prone to trespass.